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ABSTRACT

This course includes a study of the industrial single needle machine, its principal parts, general care, threading, and basic skills in machine practice. Instructional materials include films, illustration, information sheets, and other materials. (CK)

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AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM

V-12

Course Outline
APPAREL MANUFACTURING - 9377
(Industrial Single Needle Machines
and Machine Practice)
Department 45, 48 - Quin 9377.02

AC0 14510

DADE COUNTY PUBLIC SCHOOLS
DIVISION OF INSTRUCTION • 1973

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D A D E C O U N T Y P U B L I C S C H O O L S

1 4 5 0 N O R T H E A S T S E C O N D A V E N U E

M I A M I, F L O R I D A 33132

Course Outline

APPAREL MANUFACTURING - 9377
(Industrial Single Needle Machines and Machine Practice)

Department 45, 48 - Quin 9377.02

county office of

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Miami, Florida 33132

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Miami, Florida 33132

Course Description

9377	45, 48	9377.02	Industrial Single Needle Machines and Machine Practice
State Category Number	County Dept. Number	County Course Number	Course Title

This course includes a study of the industrial single needle machine; the principal parts; general care including cleaning and oiling; threading; and basic skills in machine practice.

Clock Hours 45

PREFACE

The following course outline has been prepared for youth and adults, skilled and unskilled, interested in careers in apparel manufacturing and the needle trades in general. This course will help the student develop an understanding of the workings of the industrial sewing machine.

Since this is a basic course there are not prerequisites. There are seven blocks of instruction which are further subdivided into several units each, for a total of 45 clock hours.

Upon completion of the course the student will understand the theory, concept, process of learning, scope and mechanical data regarding the industrial sewing machine.

Teaching methods are based on the individual abilities of the student. Instruction includes learning the principal parts of the machine, technical terms used, function of the machine parts, cleaning and oiling the machine and threading the machine. Knowledge conveyed will provide skills in machine operation with a minimum loss of time in work and an incentive to improve earning power.

Instruction is further developed by use of available films, illustrations, information sheets and other recommended materials, as well as lectures and demonstrations.

This outline was developed through the cooperative efforts of the instructional and supervisory personnel, the Quinmester Advisory Committee, and the Vocational Curriculum Materials Service and has been approved by the Dade County Vocational Curriculum Committee.

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GOALS

The student must be able to demonstrate:

1. The ability to practice safety.
2. A knowledge and understanding of the scope of the needle trades.
3. The ability to understand and practice the process of learning.
4. Understanding the principal parts of the industrial machine and its functions.
5. The knowledge to maintain the machine, keeping it in good working condition.
6. Basic skills with the parts that control the machine.
7. The ability to thread the machine with ease and speed.
8. A knowledge of guiding the work into the machine correctly.
9. A knowledge of the mechanism which guides the upper part of the machine.
10. The ability to understand the bobbin mechanism and the threading of the bobbin.
11. An understanding of using the knee lift to raise the presser foot.

SPECIFIC BLOCK OBJECTIVES

BLOCK I - ORIENTATION

The student must be able to:

1. List in writing at least five safety rules in relation to using the sewing machine.
2. Explain in writing why it is necessary to handle tools with care.
3. Define in writing the breakdown of inches into smaller sections.

BLOCK II - THEORY AND CONCEPT

The student must be able to:

1. Explain in writing the concept of the learning process.
2. Write a definition for behavior.
3. Explain in writing what it takes to be successful in his or her chosen field of endeavor.

BLOCK III - INDUSTRIAL SINGLE NEEDLE MACHINES

The student must be able to:

1. List the types of industrial sewing machines used in the classroom.
2. Explain in writing the scope of the industrial sewing machine.
3. List at least five tools used during sewing machine operation.
4. Explain in writing the importance of placing tools for easy pick-up.
5. List in writing at least five indoor items made in the needle trades with the industrial machine.
6. List in writing at least five outdoor items made with the Pfaff heavy duty machine.

BLOCK IV - PRINCIPAL PARTS OF INDUSTRIAL SINGLE NEEDLE MACHINE

The student must be able to:

1. List in writing the principal parts of the industrial sewing machine.
2. Define in writing the function of the various parts of the industrial sewing machine.
3. Write the names of the parts attached to the machine table.
4. Explain in writing why it is necessary to clean and oil the machine regularly.

BLOCK V - THREADING THE MACHINE

The student must be able to:

1. List in writing the sequence of threading the upper part of the machine.
2. List in writing the sequence of under threading of the machine.
3. Explain in writing why safety precautions must be used when threading the machine.

BLOCK VI - MACHINE PRACTICE WITH THREAD

The student must be able to:

1. Demonstrate the ability to turn on the switch, position the work at a given point and guide the work into the machine.
2. Use the knee lift for raising and lowering the presser foot.
3. Sew on paper with thread in the machine.

BLOCK VII - QUINMESTER POST-TEST

The student must be able to:

1. Satisfactorily complete the quinmester post-test.

Course Outline

APPAREL MANUFACTURING - 9377
(Industrial Single Needle Machines and Machine Practice)

Department 45, 48 - Quin 9377.02

I. ORIENTATION

A. Objectives of the Course

B. Methods of Evaluation
   1. Paper and pencil tests
   2. Manipulation
   3. Job performance
   4. Hands-on sewing on target

C. Student Responsibilities
   1. School policies
   2. Absence
   3. Promptness

D. Safety Practices
   1. Checking the machine before using
   2. Shutting off the power
   3. Feet removed from treadle when machine not in use
   4. Hands at a safe distance from needle
   5. Reporting machine problems
   6. Proper attire
      a. No wide sleeves or dangling bracelets and necklaces
      b. Keeping the hair tied back

E. Work Regulations
   1. Attitudes and good work habits
   2. Reporting lost items
   3. Good health and hygiene
   4. Good housekeeping

F. Development of Basic Skills
   1. Mathematics
   2. Reading
   3. Communications

II. THEORY AND CONCEPT

A. The Learning Principles
   1. Behaviorism
   2. Acquisition
   3. Successive approximation
   4. Connectionism

B. The Learning Process
   1. Behavior
   2. Goal
   3. Motivation
   4. Tolerate frustration of failure until success is forthcoming
   5. Reward after achieving success
   6. Application and transfer to other situations

III. INDUSTRIAL SINGLE NEEDLE MACHINES

A. Types of Machines Used in the Classrooms
   1. Singer
   2. Union Special
   3. Brother
   4. Pfaff Heavy Duty

B. Scope of Industrial Machines
   1. Singer, Union Special and Brother
      a. General sewing for the needle trades
      b. Apparel manufacturing
   2. Pfaff Heavy Duty - walking foot
      a. Canvas, car seats, boat covers, tents, camping equipment, duffel bags, etc. (outdoor)
      b. Furniture, blinds, draperies, bedspreads, etc. (indoor)

C. Tools
   1. Types
      a. Long-handled screwdriver
      b. Small screwdriver
      c. Pliers
      d. Oil and oil can
      e. Tweezers
      f. Brush
   2. Placement of tools for easy pick-up
   3. Storage

D. Supplies
   1. Notebook
   2. Paper for notebook
   3. Pencil
   4. Ruler
   5. Reinforcements
   6. Scissors
   7. Pins and pin cushion
   8. Thread
   9. Muslin
   10. Lines paper for practice

IV. PRINCIPAL PARTS OF THE INDUSTRIAL SINGLE NEEDLE MACHINE

A. The Sewing Head - A Section of the Machine Arm
   1. Needle bar

IV. PRINCIPAL PARTS OF THE INDUSTRIAL SINGLE NEEDLE MACHINE (Contd.)

2. Needle bar crank
3. Take-Up mechanism
4. Presser bar
5. Pressure spring
6. Tension releaser
7. Check spring
8. Needle thread eyelets
9. Face plate

B. The Horizontal Arm
1. Supports machine arm and houses arm shaft
2. Provides mounting areas for thread handling devises

C. The Vertical or Upright Arm
1. Houses shafts, belts or connecting rods
2. Transmits the motion from the arm shaft to the mechanism in the bed of the machine
3. The machine bed supports the throat plate, cloth plate and attachments as well as the arm for moving parts underneath
4. The front of the machine
5. The needle
6. The feed dog

D. The Lower Section of the Industrial Sewing Machine
1. Shuttle or hook
2. Bobbin case holder
3. Bobbin case
4. Bobbin

E. The Machine Table
1. Light
2. Thread stand
3. On/off switch
4. Treadle
5. Drawer
6. Knee control
7. Motor
8. Clutch

F. Definition of Principal Parts

G. Oiling and Cleaning the Machine

V. THREADING THE MACHINE

A. Upper Threading
1. Sequence of threading
a. Thread stand and guide
b. Spool pin
c. Thread retainer
d. Tension discs

e. Take-up spring
f. Slack thread regulator
g. Wire thread guide
h. Take-up lever
i. Thread guide
j. Eye of needle

2. Function of guides
   a. Smoothness in operation
   b. Speed in threading
3. Clipping the thread diagonally for speedy placement in eye of needle
4. Using the balance wheel for raising the needle by hand

B. Threading the Underpart of the Machine
1. Sequence in threading
   a. Threading the bobbin mechanism
   b. Winding the bobbin
   c. Opening the slide plate for insertion of bobbin case
   d. Placing the bobbin in the bobbin case
   e. Placing the bobbin case and the bobbin on the stud of the bobbin case holder
   f. Listening for the clicking sound as the bobbin case snaps into position
   g. Bringing the thread up, using the hand wheel
   h. Placing the upper and lower threads under and in back of the presser foot ready for sewing
2. Safety precautions

VI. MACHINE PRACTICE WITH THREAD

A. Techniques in Sewing With Thread on Paper
1. Turning the switch to "on" position
2. Guiding
3. Positioning at a given point
4. Sewing along line, braking sharply at end of line
5. Using knee lift for raising and lowering presser foot for repositioning
6. Repositioning and sewing on next line and repeating until lines are completed
7. Short bursts and sharp stops
8. Machine control
9. Checking for quality

B. Practice
1. Straight lined paper
2. Cornered lined paper
3. Waby lined paper
4. Small and round circles

VII. QUINMESTER POST-TEST

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A P P E N D I X

Quinmester Post-Test Sample

Quinmester Post-Test

Name _____ Date _____ Score _____

Divide the following measurements as stated below.

PART I

1. This measurement is one inch in length. Divide into 1/16ths.

   _____

2. This measurement is two inches in length. Divide into 1/8ths.

   _____

3. This measurement is six inches in length. Divide into 3/8ths.

   _____

4. This measurement is six inches in length. Divide into 5/8ths.

   _____

5. This measurement is three inches in length. Divide into 1/4ths.

   _____

6. This measurement is four inches in length. Divide into 1/2s.

   _____

7. This measurement is six inches in length. Divide into 1 inches.

   _____

8. This measurement is five inches in length. Divide into 3/4ths.

   _____

9. Why is knowing how to divide inches into smaller parts important in this course?

10. How does the tape measure or yardstick figure in sewing as a career?

11. Why is multiplication important in this course?

12. Multiply the following examples.

4	7	9	8	5	8	6	9	3	7
x3	x8	x9	x7	x4	x5	x3	x5	x5	x7

13. Divide the following examples.

$2\overline{)6}$ $3\overline{)9}$ $4\overline{)8}$ $2\overline{)10}$ $3\overline{)6}$ $4\overline{)4}$ $5\overline{)9}$ $3\overline{)7}$ $6\overline{)9}$ $5\overline{)11}$

14. Subtract the following examples.

4	9	8	10	6	4	9	7	10	11
-3	-3	-4	-2	-3	-4	-5	-4	-3	-5

Read Each question carefully. Write your answers neatly and accurately in the space provided.

PART II.

1. List four of the learning principles of theory and concept of learning.

2. Define the meaning of behavior, goal and motivation as related in the theory and concept of learning.

3. Explain your ideals in becoming a success in your chosen field of endeavor.

4. How does the process of learning apply to other situations?

5. What, in your opinion, does it take to be successful in industry?

6. Explain why safety precautions play such an important part in the process of learning.

7. How does the ability to get along with people fit into the process of learning?

8. How does good grooming and good health fit into the process of learning?

9. How does initiative fit in with the process of learning?

10. Explain briefly in a statment why the process of learning will make you a better and more observing employee in the "World of Work."

PART III.

1. On what type of sewing machine is training for industry given?

2. List five safety rules in relation to the industrial sewing machine operation.

3. What is the operator's responsibility regarding safe conditions in industry?

4. How does good housekeeping help to make working conditions easier for the operator?

5. List the types of industrial machines used in the classrooms.

6. Explain the scope of the industrial sewing machine.

7. Explain why it is necessary to place the tools so they may be picked up with speed.

8. List at least five indoor items made in the needles trades.

9. List at least five outdoor items made with the Pfaff Heavy Duty machine.

10. Explain the importance of storing tools in a safe place.

PART IV.

1. Name the principal parts of the industrial sewing machine.

2. Explain in as few words as possible the function of the thread guides.

3. Name the parts that are attached to the sewing machine table.

4. Explain the function of each of these parts attached to the table.

5. Name the parts related to the lower section of the machine.

6. Explain the functions of each part in the lower section of the machine.

7. Explain the reason there is an oil reservoir in the lower section of the machine.

8. How does the oil reservoir send the oil through the machine?

9. Explain the reason for the oil flow window.

10. Why is it necessary for the student to understand the function of each part of the machine?

11. Explain why the machine should be cleaned and oiled regularly.

12. Name at least three manufacturers of the industrial machine.

13. What is the name of a heavy duty machine?

14. How many stitches per minute can a power driven machine make?

15. What does the word "Lockstitch" mean in connection with the industrial type sewing machine?

16. How many sections are contained in the machine arm?

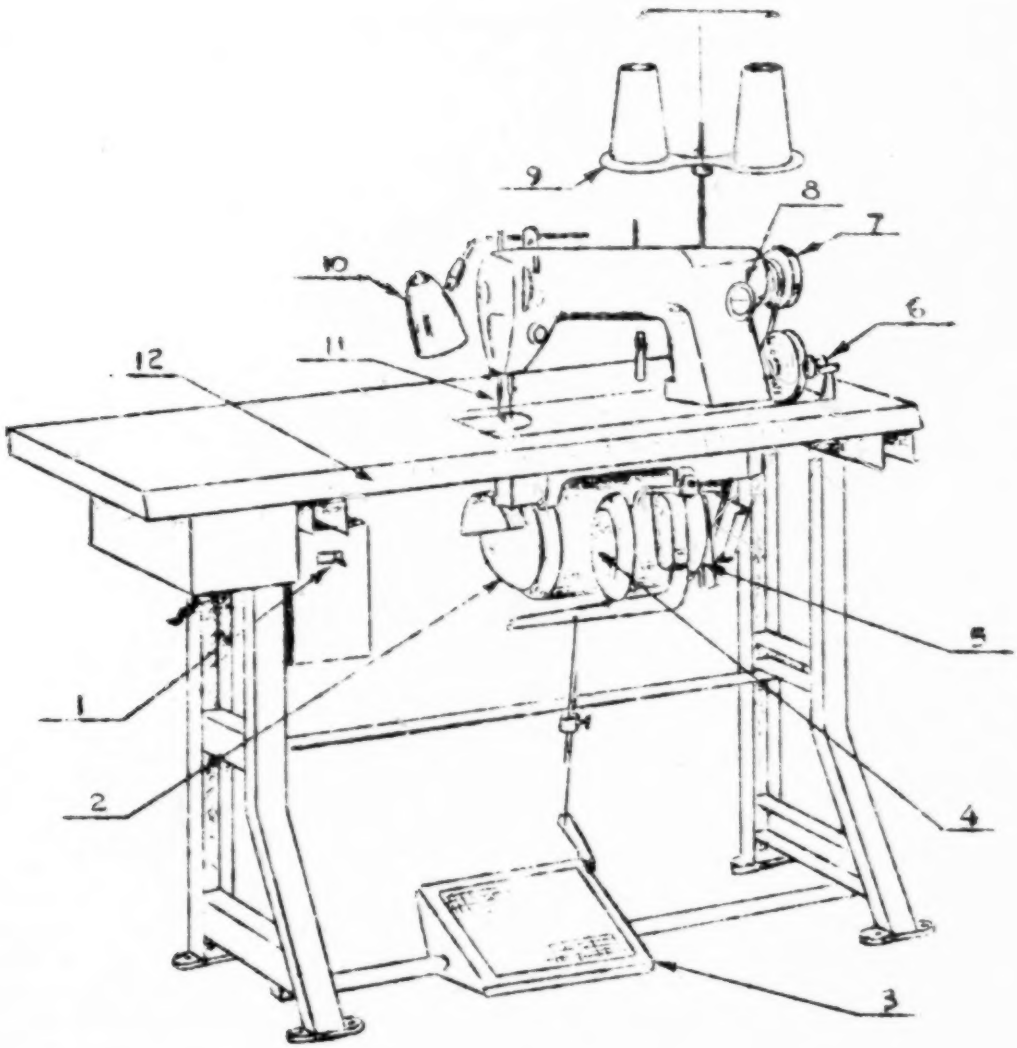
17. Name them.

18. What is the prime factor in stitch formation?

19. Which part of the machine helps to feed the material?

20. What part of the machine changes the stitch size?

The following illustration shows numbered parts of a machine. Identify these parts in the spaces provided.



1_____ 5_____ 9_____

2_____ 6_____ 10_____

3_____ 7_____ 11_____

4_____ 8_____ 12_____

Each statement needs a word, figure or a phrase to make it correct. Only one of the choices listed is correct. Place the letter of the choice you make in the space provided at the left.

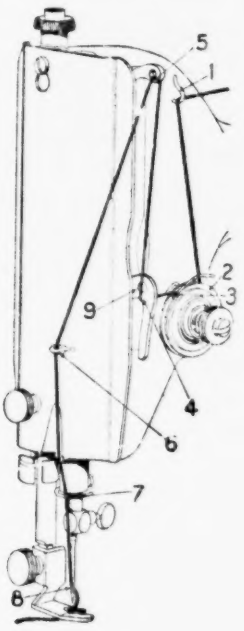
PART V.

___ 1. A single needle industrial machine illustrates the principles of a:

a. Straight sewing machine
b. Zig zag machine
c. Button sewer
d. Buttonhole machine
e. Merrow machine

___ 2. In the illustration presented here, the part of the machine marked 5 is properly called:

a. Thread guide
b. Take-up lever
c. Take-up spring
d. Pressure bar
e. Presser foot



___ 3. In order to keep the machine running smoothly, it is necessary to clean and oil it. The first step would be to:

a. Oil the machine thoroughly
b. Clean the lint from the machine
c. Oil the machine as you clean it
d. Oiling is not necessary if it has an oil reservoir
e. Oil the hook of the bobbin case carrier

___ 4. What is the function of the take-up lever:

a. To hold the work in place
b. To raise the presser foot
c. To release the hold of the thread from the spool
d. To feed the material

Following are exercises which are to be executed under the instructor's supervision

PART VI.

1. Thread the upper part of the machine. Start with the thread on the thread stand and spool pin, inserting thread through all thread guides, tensions and needle. Target time: 20 seconds.

2. Thread the bobbin. Place in the bobbin case and insert on stud of bobbin case holder in the underpart of the machine.
Target time: 24 seconds.

3. Position work at a given point, guide into machine and sew along lines from beginning to end.

4. Raise the presser foot with the knee lift. Reposition on the next line. Start sewing, braking sharply at given points. Repeat.

5. Start a new lined sheet. Sew in short bursts and sharp stops.

6. Why is it necessary for a beginner to sew on lined paper:

7. What is the function of the knee lift:

8. In what position should the take-up lever be in order to release the hold on the thread:

9. Why must the machine be properly threaded to start sewing:

10. Explain the importance of the treadle for controlling the machine:

ANSWER KEY TO QUINMESTER POST-TEST

PART I.

1. 16 - 1/16ths

2. 16 - 1/8ths

3. 16 - 3/8ths

4. 9 - 5/8ths

5. 12 - 1/4ths

6. 8 - 1/2s

7. 6 - 1 inch

8. 6 - 3/4 inch

9, 10, 11 - Answers satisfactorily acceptable to instructor

12. 12, 56, 81, 56, 20, 40, 18, 45, 15, 49

13. 3, 3, 2, 5, 2, 1, 1-4/5, 2-1/3, 1-1/2, 2-1/5

14. 1, 6, 4, 8, 3, 0, 4, 3, 7, 6

PART II.

1. Bahaviorism, acquisition, successive approximation, connectionism

2. Satisfaction, enhancement and protection of needs. (Behavior)
   Reward related to satisfaction of need. (Goal)

3-10 Answers should be satisfactorily acceptable to instructor

PART III.

1. Industrial single needle sewing machine

2-10 Answers should be satisfactorily acceptable to instructor

PART IV.

1. The sewing head, the horizontal arm, the vertical or upright arm

2. Satisfactorily acceptable to instructor

3. Light, thread stand, on/off switch, treadle, drawer, knee control, motor, clutch

4. Satisfactorily acceptable to instructor

5. Shuttle or hook, bobbin case holder, bobbin case, bobbin

6. Satisfactorily acceptable to instructor

7. Self-oiling

8. It filters the oil and sends it through the vertical arm as the machine operates

9. Visual evidence that oil is flowing through machine in operation

10. To operate the machine without problems

11. To insure smooth operation and to avoid problems

12. Singer, Union Special, Brother

13. Pfaff

14. More than 5,000 stitches per minute

15. Plain sewing stitch formed by two threads being locked by passing through a loop of the upper thread

16. Three

17. The sewing head, the horizontal arm, the vertical or upright arm

18. The needle

19. The feed dog

20. The stitch regulator

PART V. (Illustration)

1. Switch

2. Motor

3. Treadle

4. Knee control

5. Clutch

6. Bobbin winder

7. Balance or hand wheel

8. Oil flow window

9. Thread stand

10. Light

11. Presser foot

12. Ruler on table

PART V.

1. a

2. b

3. b

4. c

PART VI.

1-5 Satisfactorily acceptable to instructor

6. To control the machine, learn how to guide the work, feed the work into the machine and sew straight

7. To raise and lower the presser foot so both hands will be free to handle the work

8. At the highest point

9. So problems will not arise while working

10. To start and stop the motion of the machine

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